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Michael J. Mallie
BLAKELY, SOKOLOFF,
TAYLOR & ZAFMAN LLP
12400 Wilshire Boulevard, Seventh Floor
Los Angeles, CA 90025-1026

EXAMINER	
SHERALI, ISHRAT I	

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/800,831	SCHWARTZ ET AL.	
	Examiner	Art Unit	
	Sherali Ishrat	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *21 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 June 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/22004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment/Arguments

1. This action is in response to amendment/arguments received on 6/21/2004.

Applicant's arguments are fully considered however they are moot due to new grounds of rejection, which was necessitated by the amendment to the claims.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 5-8,12-15, 19-20 are rejected under 35 USC § 102 (e) as being anticipated by Joshi et al. (US 6,668,090).

Regarding claims 1 and 15, Joshi discloses receiving a code-stream of compressed image data organized into plurality of layers (Joshi in col. 5, lines 12-13, states "A flow chart of a JPEG2000 image encoder according to the present invention is shown in figure 2, in col. 5, 31-35, Joshi states, "For each code-block, the compressed bit-stream and the byte -count table are fed to layer formation and ordering decision unit". This corresponds to receiving a code-stream of compressed image data organized into plurality of layers),

each of the plurality layers comprises coded data that adds visual value to the image (Joshi in col. 6, lines 58-62, states "The J^{th} entry of the visual quality table specifies the minimum expected visual quality of reconstructed image if only the first j layers are included in the compressed bit-stream" i.e with each additional layer, the visual quality of the reconstructed image will increase. This corresponds to each of the plurality layers comprises coded data that adds visual value to the image);

selecting one or more of the layers for quantization based on sideband information accompanying the code-stream (Joshi in col. 5, lines 42-47 states "The layer formation and ordering decision unit also specifies that the overall bit-stream is arranged in a layer progressive manner. This ordering information and the layered compressed code-blocks are fed to JPEG2000 bit-stream organizer". This ordering information which also include table 210 for visual quality, in figure 2, block 212, corresponds to sideband information accompanying the layer compressed code-blocks, and Joshi in col. 6, lines 55-61, states "The layer formation and ordering decision unit [sideband information] determines the number of coding pass to be included in each layer so that the visual quality criteria as specified by the table 210 [sideband information with ordering decision unit figure 2, block 212] are met. The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream". The inclusion of first "j" layers in the code-stream and thereby deleting or discarding the rest of the layers which is according to visual quality table 210 [sideband information] corresponds to selecting one or more of the layers for quantization based on sideband

information accompanying the code-stream. Layers other than the first j layers are selected for quantization by discarding or deleting those layers);

the sideband information includes information specifying the quantization that is to be performed (Joshi in col. 6, lines 55-61, states "The layer formation and ordering decision unit [sideband information] determines the number of coding pass to be included in each layer so that the visual quality criteria as specified by the table 210 [sideband information with ordering decision unit figure 2, block 212] are met. The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream". The inclusion of first "j" layers in the code-stream and thereby deleting or discarding the rest of the layers which is according to visual quality table 210 [sideband information] corresponds to the sideband information which includes information specifying the quantization that is to be performed. Layers other than the first j layers are selected for quantization by discarding or deleting those layers in accordance with table 210); and

decompressing non-quantized layers of the code-stream (Joshi in col. 6, lines 58-62, The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream". In the system of Joshi Layers are quantized by discarding or deleting layer because Joshi is using only using first j layer for image reconstruction. The first j layers in the system of Joshi are non-quantized layers and first j layers are used to reconstruct or decompress the code-stream).

Regarding claim 5, 12 and 19, Joshi discloses selecting the one or more layer is based on a meeting a target rate (Joshi in col. 6, lines 58-62, The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream". This corresponds to selecting the one or more layer is based on a meeting a target rate of visual quality).

Regarding claim 6 and 13, Joshi discloses plurality of layers are predefined based on resolution so that selecting the one or more layers is based on meeting a target distortion (Joshi in col. 6, lines 58-62, The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream" and Joshi in col. 8, lines 41-45, states "The visual quality levels are pre-specified in terms of threshold viewing distances". This corresponds to plurality of layers are predefined based on resolution [based on the viewing distance] so that selecting the one or more layers is based on meeting a target).

Regarding claim 7 and 14, Joshi discloses plurality of layers are predefined based on viewing distance resolution so that selecting the one or more layers is performed to display different viewing distances (Joshi in col. 6, lines 58-62, The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream" and Joshi in col. 8, lines 41-45, states "The visual quality levels are pre-specified in terms of threshold viewing distances". This corresponds to plurality of layers are predefined based on viewing distance resolution so that selecting the one or more layers is performed to display different viewing distances).

Regarding claim 8, Joshi discloses a decoder (Joshi, in col. 6, lines 39-40, states "reconstruction at the decoder" which corresponds to decoder), comprising:

a memory to store distortion characteristics (Joshi in col. 6, lines 58-62, states "The J th entry of the visual quality table (210) specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit stream". This corresponds to a memory [table 210 in figure 2] to store distortion characteristics);

quantization logic coupled to the memory to quantize of codestream of compressed image data organized in plurality of layers (Joshi in col. 6, lines 58-62, states "The J th entry of the visual quality table (210) specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit stream". Joshi is quantizing by deleting or discarding plurality of layers which are not used in the reconstruction of the image, only first j layers are used for reconstruction of the image. This quantization is performed in accordance with table 210 which is a memory therefore quantization logic coupled to the memory to quantize of codestream of compressed image data organized in plurality of layers),

each of the plurality of layers comprises coded data that adds visual value to the the image (Joshi in col. 6, lines 58-62, states "The Jth entry of the visual quality table specifies the minimum expected visual quality of reconstructed image if only the first j layers are included in the compressed bit-stream" i.e with each additional layer, the visual quality of the reconstructed image will increase. This corresponds to each of the plurality layers comprises coded data that adds visual value to the image));

the quantization logic selecting one or more of the plurality layers of quantization based on sideband information accompanying the code-stream (Joshi in col. 5, lines 42-47 states "The layer formation and ordering decision unit also specifies that the overall bit-stream is arranged in a layer progressive manner. This ordering information and the layered compressed code-blocks are fed to JPEG2000 bit-stream organizer". This ordering information which also include table 210 for visual quality, in figure 2, block 212, corresponds to sideband information accompanying the layer compressed code-blocks, and Joshi in col. 6, lines 55-61, states "The layer formation and ordering decision unit [sideband information] determines the number of coding pass to be included in each layer so that the visual quality criteria as specified by the table 210 [sideband information with ordering decision unit figure 2, block 212] are met. The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream". The inclusion of first "j" layers in the code-stream and thereby deleting or discarding the rest of the layers which is according to visual quality table 210 [sideband information] corresponds to selecting one or more of the layers for quantization based on sideband information accompanying the code-stream. Layers other than the first j layers are selected for quantization by discarding or deleting those layers); and

the side-band information includes information specifying the quantization that is to be performed (Joshi in col. 6, lines 55-61, states "The layer formation and ordering decision unit [sideband information] determines the number of coding pass to be included in each layer so that the visual quality criteria as specified by the table 210

[sideband information with ordering decision unit figure 2, block 212] are met. The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream". The inclusion of first "j" layers in the code-stream and thereby deleting or discarding the rest of the layers which is according to visual quality table 210 [sideband information] corresponds the sideband information includes information specifying the quantization that is to be performed. Layers other than the first j layers are selected for quantization by discarding or deleting those layers in accordance with table 210);

decoding logic coupled to the quantization logic to decompress non-quantized layers of the code-stream (Joshi in col. 6, lines 58-62, The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream". In the system of Joshi Layers are quantized by discarding or deleting layer because Joshi is using only using first j layer for reconstruction. This corresponds to decoding logic coupled to the quantization logic to decompress non-quantized layers of the code-stream).

Regarding claims 20, Joshi discloses means for receiving a code-stream of compressed image data organized into plurality of layers (Joshi in col. 5, lines 12-13, states "A flow chart of a JPEG2000 image encoder according to the present invention is shown in figure 2, in col. 5, 31-35, Joshi states, "For each code-block, the compressed bit-stream and the byte -count table are fed to layer formation and ordering decision unit". This corresponds to means for receiving a code-stream of compressed image data organized into plurality of layers),

each of the plurality layers comprises coded data that adds visual value to the image (Joshi in col. 6, lines 58-62, states "The J^{th} entry of the visual quality table specifies the minimum expected visual quality of reconstructed image if only the first j layers are included in the compressed bit-stream" i.e with each additional layer, the visual quality of the reconstructed image will increase. This corresponds to each of the plurality layers comprises coded data that adds visual value to the image);

means for selecting one or more of the layers for quantization based on sideband information accompanying the code-stream (Joshi in col. 5, lines 42-47 states "The layer formation and ordering decision unit also specifies that the overall bit-stream is arranged in a layer progressive manner. This ordering information and the layered compressed code-blocks are fed to JPEG2000 bit-stream organizer". This ordering information which also include table 210 for visual quality, in figure 2, block 212, corresponds to sideband information accompanying the layer compressed code-blocks, and Joshi in col. 6, lines 55-61, states "The layer formation and ordering decision unit [sideband information] determines the number of coding pass to be included in each layer so that the visual quality criteria as specified by the table 210 [sideband information with ordering decision unit figure 2, block 212] are met. The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream". The inclusion of first "j" layers in the code-stream and thereby deleting or discarding the rest of the layers which is according to visual quality table 210 [sideband information] corresponds to means for selecting one or more of the layers for quantization based on

sideband information accompanying the code-stream. Layers other than the first j layers are selected for quantization by discarding or deleting those layers);

the sideband information includes information specifying the quantization that is to be performed (Joshi in col. 6, lines 55-61, states "The layer formation and ordering decision unit [sideband information] determines the number of coding pass to be included in each layer so that the visual quality criteria as specified by the table 210 [sideband information with ordering decision unit figure 2, block 212] are met. The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream". The inclusion of first "j" layers in the code-stream and thereby deleting or discarding the rest of the layers which is according to visual quality table 210 [sideband information] corresponds the sideband information includes information specifying the quantization that is to be performed. Layers other than the first j layers are selected for quantization by discarding or deleting those layers in accordance with table 210); and

means for decompressing non-quantized layers of the code-stream (Joshi in col. 6, lines 58-62, The J^{th} entry of the visual quality specifies the minimum expected visual quality of the reconstructed image if only the first j layers are included in the compressed bit-stream". In the system of Joshi Layers are quantized by discarding or deleting layer because Joshi is using only using first j layer for reconstruction. The first j layers in the system of Joshi are non-quantized layers and first j layers are used to reconstruct or decompress the code-stream. This corresponds to means for

decompressing [image reconstruction] non-quanized layers [the first j layers which are not discarded or deleted] of the code-stream).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2-4, 9-11, 16-18 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joshi et al. (US 6,668,090).

Regarding claims 2-4, 9-11 and 16-18, Joshi discloses sideband information (Joshi in col. 5, lines 42-47 states "The layer formation and ordering decision unit also specifies that the overall bit-stream is arranged in a layer progressive manner. This ordering information and the layered compressed code-blocks are fed to JPEG2000 bit-stream organizer". This ordering information which also include table 210 for visual quality, in figure 2, block 212, corresponds to sideband information accompanying the layer compressed code-blocks).

Joshi has not explicitly disclosed marker segments, comment marker and COM marker. However Joshi in col. 5, lines 12-13, states "A flow chart of a JPEG2000 image encoder according to the present invention is shown in figure 2. It is well known that marker segments, comment marker and COM marker are part of JPEG2000 encoding

standard. Joshi is storing sideband information in table 210 (figure 2). Storing sideband information in marker segments, comment marker and COM marker is design choice and such selection of storage do not carry patentable weight.

Regarding claims 21-23, Joshi discloses sideband information (Joshi in col. 5, lines 42-47 states "The layer formation and ordering decision unit also specifies that the overall bit-stream is arranged in a layer progressive manner. This ordering information and the layered compressed code-blocks are fed to JPEG2000 bit-stream organizer". This ordering information which also include table 210 for visual quality, in figure 2, block 212, corresponds to sideband information accompanying the layer compressed code-blocks).

Joshi has not explicitly disclosed storing side-band information in arithmetic coder (AC) termination area, end of a packet header and after previous packet and before beginning of next tile. However Joshi in col. 5, lines 12-13, states "A flow chart of a JPEG2000 image encoder according to the present invention is shown in figure 2. It is well known that (AC) termination area, end of a packet header and after previous packet and before beginning of next tile are part of JPEG2000 standard. Joshi is storing sideband information in table 210 (figure 2). Storing sideband information in (AC) termination area, end of a packet header and after previous packet and before beginning of next tile is design choice and such selection of storage do not carry patentable weight.

Regarding claim 24, Joshi discloses specifying number of bytes for each one of resolution and rate across an entire image (Joshi in col. 5, lines 48-52, states "master

table generator whose j^{th} entry specifies the number of bytes required to represent compressed data corresponding to the first j layers" and in col. 8, lines 50-52, Joshi states the number of bytes needed to add layer j". This corresponds to specifying number of bytes for each one of resolution [layer] and rate across an entire image).

Joshi however has not explicitly disclosed using one or more COM marker for such specification. However Joshi in col. 5, lines 12-13, states "A flow chart of a JPEG2000 image encoder according to the present invention is shown in figure 2. It is well known that COM marker is part of JPEG2000. Storing such specification for compressed JPEG2000 bit-stream in plurality of COM marker is design choice and do not carry patentable weight.

Regarding claim 25, Joshi disclose specifying relative number of bytes for each additional layer (Joshi in col. 8, lines 50-52, states the number of bytes needed to add layer j").

Joshi however has not explicitly disclosed using one or more COM marker for such specification. However Joshi in col. 5, lines 12-13, states "A flow chart of a JPEG2000 image encoder according to the present invention is shown in figure 2. It is well known that COM marker is part of JPEG2000. Storing such specification for compressed JPEG2000 bit-stream in plurality of COM marker is design choice and do not carry patentable weight.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherali Ishrat whose telephone number is 703-308-9589. The examiner can normally be reached on 8:00 AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ishrat Sherali

Patent Examiner

Group Art Unit 2621

October 4, 2004

LEO BOUDREAU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600